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ABSTRACT

A study examined the planning, implementation, and evaluation of a curriculum designed to teach 60 college level developmental reading students to use microcomputers (Apple) as learning tools and to improve their content area reading ability. The textbook from a biology course in which all but three of the subjects were enrolled was the source for development of vocabulary and reading exercises used in the study. The microcomputer aspect of the course consisted of (1) training in use of the computer as a learning tool, (2) personalized microcomputer vocabulary development, (3) evaluation of effectiveness of microcomputerized content vocabulary drill programs, and (4) speed reading and comprehension drills. Initial training in the use of the computer appeared to be satisfactory for success in the class assignments. The subsequent word processing lecture/demonstration proved disappointing--only two of the subjects began immediately to learn to use the word processor, largely due to mid-term demands on student time. The results of the vocabulary development indicated that instruction in the mechanics of operation must occur as closely as possible to the time of actual performance of those mechanics, as those who received the lecture two days earlier required constant monitoring and had several false starts or were found to have typed incorrectly large amounts of text. (HTH)

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INTRODUCTION TO COMPUTERS

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INTRODUCTION TO WORD PROCESSING:

INTEGRATING CONTENT AREA COURSEWORK INTO COLLEGE READING/STUDY SKILLS CURRICULA USING MICROCOMPUTERS

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INTRODUCTION TO WORD PROCESSING:

INTEGRATING CONTENT AREA COURSEWORK INTO

COLLEGE READING/STUDY SKILLS CURRICULA

USING MICROCOMPUTERS

In their analysis of community college developmental programs, Richardson, Fisk, and Okun (1983) pointed to the desperate need for "more full-time instructors who are trained to teach basic skills and who know how they can be taught in tandem with required content" (p. 169). Integration of content studies into developmental reading curricula is hindered by a variety of obstacles, however (Maxwell, 1979).

This paper will describe the planning, implementation, and evaluation of a curriculum designed to teach college level developmental reading students to use microcomputers as learning tools and to improve their reading ability. The general purpose was to better equip the students for college studies. The specific purpose was to improve performance in content subjects in which students were enrolled simultaneously with the developmental reading course. In this way, microcomputers were used to improve--not merely replace--traditional reading/study skills instruction at the college level.

Subjects

60 freshmen, all enrolled in a college level developmental reading course due to poor performance on the Scholastic Aptitude Test, participated in the study. Each received credit toward completion of the course for participation. Work included in-class "hands-on" demonstration and practice with computers, as well as out-of-class work.

These students were, for the most part, minority group students from upstate New York inner cities. Each had been identified by the college as being "high risk." Most were in the college's Educational Opportunity Program. All but three of the students were enrolled in a freshman biology course. The biology textbook was used as the source for development of vocabulary and reading exercises used in the study.

Overview

The microcomputer aspect of the course consisted of four major components:

1. Training in use of the computer as a learning tool. This included a general introduction to microcomputers for those students who were unfamiliar with them (the majority), and introduction to use of a word processor. Students were also taught to use teacher utility subprograms for self-instruction in technical vocabulary. This is described in Part II.

2. Personalized microcomputerized content vocabulary development. Since a major component of freshman-level courses

is technical vocabulary, students worked in small groups with the teacher utility option of a vocabulary drill game to construct word lists of their own for use with the game.

3. Evaluation of effectiveness of microcomputerized content vocabulary drill programs. Students received three prepared lessons developed from their biology textbook. Evaluation of effectiveness of these lessons was carried out, comparing vocabulary ditto worksheets with a microcomputer text vocabulary game and a microcomputer video vocabulary game.

4. Speed reading and comprehension drills. A microcomputer speed reading program, with accompanying tutorial information on speed reading, was used with the students. Reading drills were taken from the students' biology textbook.

Part I: Training in Use of the Computer As a Learning Tool

Initial Training

Description. Initial training in use of the computer consisted of a brief 15-minute introductory lecture/demonstration on the major components: The Apple IIe microcomputer itself, the disk drive, diskettes, and the monitor. A large-screen television set was used as a monitor. Training was carried out in three small groups of approximately 20 students each.

No attempt was made to deal with the mechanics of operation except for the concept of transferring electronic information

from a disk to the computer. Previous experience had indicated that this specific knowledge was important to novices' understanding of the use of diskettes and clarified the answer to such questions as "What does the red light on the drive mean?" and "How can you take the disk out and still have the computer running?"

After a short question-and-answer period, students were assigned to work in groups of two on the tutorial disk entitled "Know Your Apple IIe" (Muse Software). Three of the five lessons were assigned: "The Keyboard," "The Monitor," and "The Disk Drive." The remaining two lessons ("Inside the Microcomputer" and "The Back of the Microcomputer") were recommended, but due to their technical nature were not required. They did not contain information essential to success in the class assignments.

By working in groups of two, students were usually able to find the answer to low-level questions without asking the instructor. Those students for whom the tutorial information was already familiar were allowed to leave class early. All students were to finish the tutorial before the next class (a copy was available in the reference library for use on college microcomputers) and were responsible for the information for a quiz.

Results and conclusions. This brief introduction appeared to be satisfactory for success in the class assignments. It should be remembered that a minority of the students had prior experience with microcomputers, albeit very limited in depth. It is also true that most course assignments were carried out in class, or at least begun in class, so that students had a good

idea as to how the programs operated and could ask questions of the instructor if necessary. The resulting smooth transition to use of educational software was an indication that detailed presentation of the mechanics of operation of microcomputers is unnecessary for this purpose.

One student demonstrated some hesitation at working with the microcomputer, complaining to the teaching assistant that she "just couldn't work one of those things." After some low-key encouragement, the student did proceed with the assignment and showed no further problems.

Such detailed presentations--sometimes given by computer enthusiasts who do not have a feel for the pragmatic concerns of their students--often actually confuse students more than help them by presenting them with too large an amount of factual information to assimilate in a short period of time. Introductions should be as short as possible, including only that material which is absolutely essential for success in the assignment at hand. Perhaps the following short checklist could be used in preparation of such introductory lecture/ demonstrations:

1. Will the students <u>use</u> this piece of information in this assignment? (Example: Students must know how to "boot" the disk right from the start. They do not need to know the term "boot.")

2. Will the students use this piece of information <u>today</u>, or can it wait till a later date? (Example: Students will need to know use of the CONTROL key for the second day's

assignment. but it is not necessary for the first day.)

3. Does each student need to know this. or can I explain it later to the one or two who must know it? (In Word Attack. if students using a microcomputer without a printer were to request a printout of the game score. the program would bomb. Those few groups without printer hookups could be informed of this while playing the game.)

4. Can students figure this out for themselves. or must the instructor present it? (One might expect students to be able to figure out that the monitor must be turned on when the computer is turned on. Experience shows that students do not.)

5. Is there information which is necessary to present in order to avoid serious problems? (While students do not need to be told to handle disks carefully, they do need to know that the oval hole through which the drive head reads information should not be touched with fingers.)

Word Processing

Description. A 45-minute introduction to the AppleWorks (Apple Computer Corporation) word processor was given to the students in the form of a lecture/demonstration. The format of this presentation as a lecture/demonstration was designed in compliance with findings by Wagner, O'Toole and Kazelskis (1985) that computer demonstration of word processing software resulted in more writing and better opinions of word processing than lecture or simple study of documentation. This demonstration included the following:

Booting the AppleWorks disk

Loading a stored file (called a "composition" for user-friendliness' sake, rather than a "file.")

Cursor movement within the file

Correcting errors within the file

Inserting words, sentences, and paragraphs within the file

Moving a paragraph within the file (This is an advanced command unnecessary for novices. Future introductions would include mention of it, but no demonstration.)

Use of the "Help" command to view a listing of possible commands (OPEN-APPLE ?, in AppleWorks)

Use of OPEN-APPLE O command to perform the following printing options:

Underlining

Double spacing

Begin new page

Change margins (Again, this is an advanced command which would not be included in future introductions.)

Mention, but no demonstration, of other options possible through AppleWorks (i.e., page-by-page printing, boldfacing, right justification, centering).

Saving text

Starting a new file

Printing a file and insertion of paper in the printer

Initializing a disk using an internal AppleWorks command, with strong warning that such initialization should take

place only once per disk or existing files would be erased

At the close of the introductory lecture/demonstration, reference was made to the procedure students would have to follow to attain proficiency in use of the word processor:

1. Complete a one-hour tutorial disk, available at the library, on use of AppleWorks which would give hands-on experience and feedback as to cursor movement, text manipulation, and so forth. It was recommended that students take notes from the disk.

2. Purchase computer paper and a blank disk at the school bookstore. Immediate initialization of the disk was recommended.

3. Plan on spending some four hours of practice in learning to use AppleWorks. Students were warned not to start practicing by typing a paper which was due soon, as low-level mechanical problems always slow down the learning process.

4. Students were urged to begin learning the word processor immediately, as the instructor would be available to answer questions in class about mechanical details. Experience has shown that novices often have many very simple questions which create havoc unless an experienced user is available to answer them.

Results and conclusions. Final results were disappointing. Only two of the students immediately began to learn to use the word processor. While the demonstration session could be ~~justified~~ in the sense that ~~students had~~ become more "computer literate" in that they understood the purpose and function of

word processing software. this was not considered sufficient justification for the devotion of a class period to the task. The purpose of a developmental reading course, after all, is to strengthen student learning skills, not to teach them particular content such as computer literacy.

In discussing the matter with some students, the instructor found a variety of factors had combined to discourage learning the word processor. Of most importance were immediate demands on student-time. The introductory session had taken place during mid-term examinations, and most students simply did not believe they had the time to devote to nonessentials. The instructor had pointed out the fallacy behind such reasoning during the demonstration: A few hours spent now could save enormous amounts of time--not to mention result in improved composition performance due to ease of revision--for the rest of the students' college careers. This rationale was not, apparently, sufficiently strong to convince many students.

For the next semester's class, two possible options to improve the results might be considered:

1. Provision of an optional workshop series, out of class time, for those students willing to devote the time and energy to actually learning to use the word processor.

2. Incorporation of a major word processing component into the developmental reading class. This would have to include an introductory lecture/demonstration similar to the one described here, required use of the tutorial lessons, supervised practice sessions with the word processor, and required writing

assignments desioned for use of the word processor.

Part II: Personalized Microcomputerized Content Area Vocabulary Development

[A more complete version of this section is contained in Balajthy, 1985a.]

One of the great difficulties faced by college level developmental reading instructors involves the important role of vocabulary knowledge in reading comprehension. A series of studies by Davis, for instance, has found that approximately 80% of the variance in comprehension is accounted for by vocabulary knowledge (Davis, 1968). It would appear vital to improve vocabulary knowledge among college readers in order to improve their comprehension.

The difficulty lies in the amount of time available to both the college students as they try to succeed in their content coursework and to the developmental instructors as they try to cover the array of college level reading/study skills in their courses. Many instructors have taken the path of assigning their students vocabulary workbooks which drill them on low-frequency words or on structural analysis skills. In such cases, however, students face the problem of learning both the general vocabulary words given by the developmental instructor and specific technical terms from freshman content area courses. Such introductory courses often have a very large technical vocabulary component. Indeed, the actual conceptual level in such courses is often rather low (in comparison to more advanced courses in the same content area), with emphasis placed on learning of the basic technical terms for the content area.

Description

A vocabulary video drill program entitled Word Attack! (Davidson) was used in class. The program was chosen because of its motivational video game format and because it was one of the ten best-selling educational programs, the top-seller among vocabulary programs (Classroom Computer Learning, 1985). In addition, the program has a "teacher utility"--a subprogram designed to allow teachers to input vocabulary words, definitions, and contextual sentences of their own choice.

Working in groups of three or four, students developed a list of technical vocabulary words from chapters of their biology textbooks. For each word, they wrote a brief definition and two sample sentences. Using the teacher utility of Word Attack!, they then constructed a fifteen-word lesson and stored it on disk.

Results and Conclusions

With continuous monitoring by the instructor, students were able to complete the assignment within a one-hour period. Since in general at least one person within each group had some typing skills, the actual typing went fairly smoothly.

Use of the teacher utility, however, was somewhat more difficult. Two of the three classes had received a half-hour lecture/demonstration on the utility two days earlier. These groups required constant monitoring and several of the small groups experienced false starts and had to clear the file and

begin over. Several also required the instructor's assistance for advanced editing tasks when they were found to have incorrectly typed in large amounts of text.

On the other hand, a third class received the lecture/demonstration on the same day as they employed the teacher utility to create their computerized vocabulary lessons. This class was placed under more pressure than the other classes, as their definitions and sentences had to be constructed in the two hour interlude between the lecture/demonstration and the actual typing. Despite this increased pressure, the class performance was greatly superior to that of the other classes. Virtually no instructor supervision was required as students typed their lessons into the computer. The assignment was completed earlier than had been done in the other classes, and students were given time to play the video game lesson they had created.

Certainly the conclusion from this informal study is clear: Instruction in the mechanics of operation must occur as closely as possible to the time of actual performance of those mechanics.

Part III: Evaluation of Effectiveness of Microcomputerized Content Vocabulary Drill Programs

Description

Students were randomly divided into three equal groups. Each group completed one of each of the following assignment types, administered in counterbalanced time order:

Ditto vocabulary drill

Vocabulary text drill game (Quizit--Regents/ALA)

Vocabulary video drill game (Word Attack!--Davidson)

Each lesson consisted of fifteen vocabulary words drawn from the students' biology textbooks. Students completed the drills in class, then immediately took a multiple choice vocabulary test. Each student was also administered a multiple choice vocabulary test on all lessons one week after completion of the third lesson.

[A more complete version of this section is contained in Balajthy & Bacon (1985).]

Part IV: Content Area Speed Reading And Comprehension Drills

Description

All students were given a one half-hour introduction to the program Speed Reader II (Davidson). This program provides some limited tutorial instruction on speed reading, then drills students using tachistoscopic flashing of words and phrases and several presentation formats for essays and stories stored on disk.

Students were assigned to read all the on-disk essays pertaining to the theory and practice of speed reading. They were warned that they would be held accountable for the knowledge contained in these essays. They were also provided with text files for speed reading taken from their biology textbooks, allowing them to simultaneously practice speed reading and study the biology text.

[A more complete version of this section is contained in Balajthy (1985b).]

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